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OLSON & HIERL, LTD.
36th Floor
20 North Wacker Drive
Chicago, IL 60606

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RECORD OF ORAL HEARING

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte PATRICK C. ST. GERMAIN, GERALD K. LANGRECK,
VERNON C. WICKMAN, and RYAN J. CARLSON

Appeal 2007-2788
Application 10/717,019
Technology Center 3600

Oral Hearing Held: April 9, 2008

Before MURRIEL E. CRAWFORD, JENNIFER D. BAHR, and JOSEPH A. FISCHETTI, Administrative Patent Judges

ON BEHALF OF THE APPELLANT:

TALIVALOIS CEPURITIS, ATTORNEY
Olson & Cepuritis, LTD.
20 North Wacker Drive
36th Floor
Chicago, IL 60606

The above-entitled matter came on for hearing on April 9, 2007, at the U.S. Patent and Trademark Office, 600 Dulany Street, Alexandria, Virginia, before Dan Hawkins, Free State Reporting, Inc.

PROCEEDINGS

JUDGE CRAWFORD: Good morning.

MR. CEPURITIS: Good morning. I'm Tally Cepuritis representing Patrick St. Germain in this Appeal involving your Serial Number 10/717,019. With the Board's permission, may I tack up two enlargements of the principal reference?

JUDGE CRAWFORD: Sure.

MR. CEPURITIS: In this case, Claims 10 through 14 are on appeal. These claims define the web tensioning device that utilizes acceleration of a dancer arm as an indicator whether or not web tension needs adjustment.

The outstanding rejections are based, there are two of them, on Section 103a. We respectfully submit however, that the record in this case has not established a *prima facie* case of obviousness. The claimed invention is conceptually very different from what is shown in the applied references. The claimed invention looks at acceleration of the dancer arm as an indicator of a need to adjust web tension.

The applied references, Cotay (phonetic sp.) and Rejala (phonetic sp.), both utilize outward signals from special sensors, sensors that are not dependent on dancer arm movement to ascertain need for tension adjustment.

These are enlarged drawings from Cotay, the principal reference. Cotay senses the real position, which is R, sub P, right here, and the real diameter over here and uses those parameters in essence to determine at any given moment the web caliber and then adjusts the web tension accordingly.

We see that here. This is the circuit. Here is RP. Here's the other input, the real diameter. And B has the present desired tension. These are the input for the controller. The controller then outputs a signal, 20, to adjust the web tension. And, FE, right here, is but the feedback loop to assure that the instructions received on the input have been satisfied and followed; that's Cotay.

Rejala, the secondary reference, senses six different parameters for monitoring and adjusting web tension. In Rajala -- and I believe the easiest way to see that here is when we look at Figure 3 where the measured variables, all six of them, identified over here. Those are the parameters that are then used to adjust or maintain web tension.

Neither Cotay nor Rajala look to the acceleration of the dancer arm, which is what our invention does to control web tension. Now, it goes without saying really that obviousness is to be determined according to the standards that were reaffirmed in the recent decision KSR International Company v. Teleflex. The present obviousness rejections, however, fail to meet that standard. The differences between the prior art and the claimed invention have not been fully identified by the Examiner. The Examiner has focused on the similarities and unfortunately, has overlooked some material differences, in particular -- oh, I would also like to mention that even after KSR it remains necessary to identify some reason that would have led one of ordinary skill to modify a known device, in this case the Cotay device, in a particular manner to establish a *prima facie* case. The Federal Circuit reminded us of that in a recently implicated Chemical Industry, Limited v. Alpha Farmer Proprietary, Limited. I'm not sure that that case has been

published yet. It was decided on June 28, 2007, and it's Federal Circuit Appeal Number 06-1329.

Back to the differences between the prior art and the claimed invention. With respect to the principal reference, Cotay shows continuous monitoring of web tension; however, Cotay does not teach use of angular position sensor for the dancer arm. If we look at the Examiner's answer, Page 8, bottom of that page, the Examiner appears to agree with us there. Actually, it's Page 6 at the bottom, about the fourth line from the bottom. The Examiner says -- the Examiner does not contend that Cotay discloses an angular sensor used to determine the position of the dancer role. Well, Cotay also -- I totally agree with that, but I'd also like to add that Cotay certainly does not utilize an angular sensor to ascertain the acceleration of the dancer arm. Yet, the angular position sensor as expressly stated claimed element carries through all, all of the claims. Okay, it also does not teach application of a compensating torque to the dancer arm by a server motor. A compensating torque opposes the force generated by the acceleration, acceleration of the dancer arm.

Cotay also does not teach a controller that generates an alpha signal in response to the acceleration of the dancer arm as detected by the angular position sensor; major differences here.

Now, with respect to Rajala, first of all, Rajala uses a different approach to, to web tension and monitoring. Whereas indicated that Cotay uses a continuous monitoring approach, Rejala uses incremental monitoring of tension. It just keeps sampling it, 300 or more times a second. Rajala, in any event, does not supply the claimed elements that are missing from Cotay.

Rajala does not teach compensation for a dancer arm acceleration due to changes in web tension. There is no factual basis in Rajala for the Examiner's contention on Page 5 that Rajala teaches compensating for the effect of acceleration of a dancer role. It's not so. I've explained it in greater detail in the Brief, but that's the point I'd like to make.

Also, the Examiner seems to indicate that Rajala compensates for the acceleration of the dancer. First of all, there is no dancer arm in Rajala. In Rajala, the dancer, the dancer, 24, is carried by a wire which then is moved by a chain which in turn is attached to a motor. The, the, the point is that in Rajala the only acceleration that Rajala talks about is vertical acceleration due to gravity. Rajala mentions vertical acceleration in Column 10, Line 29. It says, and the dancer mass time, time, misspelled, misspelled that -- the dancer mass times its vertical acceleration at any given time. This is confirmed when we look at Figure 3 where in the force component there is mass times G, mass time gravity. That's the force due to, due to acceleration of gravity. You also see that same term on this time Figure 4, capital M times G downward force. And, that is confirmed as being acceleration due to gravity if we look at Column 9, Line about 28, where MG equals mass of the dancer role times gravity. So, that's the only acceleration he's talking about. He's not talking about the instantaneous acceleration of a dancer arm, a nonexistent dancer arm in this particular instance due to changes, instantaneous changes in web tension.

Rajala also does not teach the use of a dancer arm of any kind, as I indicated a moment ago. Dancer, 24, is carried by cable, 28. Dancer, 24, moves up and down. It's the only movement that's permissible in Rajala. It does not pivot about a fixed point.

Rajala also does not teach an angular position sensor for the dancer arm. There's no pivot. There's no arm, so there's no angular positioning and nothing to be sensed as far as the angular position of a dancer arm as we claim.

It does not teach application of a compensating --Rajala also does not teach application of compensation torque to the dancer arm. Rajala talks about forces and provides a complex formula, six parameters how he proposes to maintain and monitor web tension.

First of all, I think it's readily apparent that one of ordinary skill in the art, whatever that skill level may be, is not going to look -- there's no reason whatsoever to look to Rajala to somehow replace the sensors that look at the feed roller with something downstream for instantaneous monitoring of the web velocity as taught by Rajala.

Now, Examiner contention of obviousness as stated in the answer at the bottom of Page 3 lacks factual support in the record. On Page 3 the Examiner states at the very bottom, the last paragraph on that page, four lines up, it would have been obvious to one having ordinary skill in the art at the time invention was made to provide Cotay with an angular position sensor to detect the acceleration of the dancer role and to apply a torque adjusted by an amount substantially the same as the force corresponding to the dancer role acceleration, as taught by Rajala, to improve control over the web tension. There is no factual basis for that statement in the record whatsoever.

As I indicated a moment ago, the only acceleration that Rajala is concerned with is acceleration due to gravity of the dancer role itself in the vertical position, nothing more. Their conclusion, lacking in underlying

facts that's here, clearly does not make up a *prima facie* case of obviousness. Now, in the answer at Page 4, the Examiner contends -- I have to make sure -- ah yes, at the very top of Page 4 contends "the sensor used to determine the position of the dancer role of Cotay is necessarily an angular position sensor since the position of the dancer role determines its angular position." Well, I submit that's a non sequitur. There is nothing in Cotay that shows that the angle -- the attitude of dancer arm, 14, is sensed in any way. I submit that the Examiner misconstrues the term sensor in this particular statement. Cotay derives no information whatsoever from the angular position of dancer arm, 14 -- information that Cotay uses reiterates comes from here.

Also, the Examiner has not identified the purported sensor in Cotay. Arm, 14, only serves to carry the dancer, the roller, 11. In Cotay, signals for web tension control are provided, as I indicated before, by RD and RP.

Now, regarding Claim 11, the foregoing comments are equally applicable to all of the claims. Primarily, this was Claim 10, but all the other claims are depended directly -- dependent directly or independent or indirectly on that Claim 10. Now, regarding Claim 11, Rajala does not teach a guided dancer arm as I mentioned before. Examiner's own unsupported contention that any position sensor including that taught by Rajala is seen to be an encoder really cannot be given anyway. That's simply not a case. I mean there is, there is no encoder taught or mentioned by Rajala.

The further statement that the sensor is necessarily associated with a fixed end of the dancer arm clearly does not make sense. It's also not supported by the record. The dancer, 24, in Rajala is not carried by a dancer

arm. There is no fixed end of a dancer arm. As a matter of fact, there is no dancer arm.

Regarding Claim 13, Cotay mentions an electric spindle drive. That does not teach one of ordinary skill the use of an electric servomotor as presently claimed.

Regarding Claim 14, which is dependent on Claim 13, Claim 14 is a little bit more specific and we specify that this is a limited angle electric motor that is used as a servomotor. But with respect to the rejection of Claim 14, we only have the Examiner's own unsupported statement, answer and testimony if you will, that somehow an electric spindle drive automatically becomes a limited angle electric motor.

Now, I must mention also that in countering Appellant's argument presented in the Brief, the Examiner's response is replete with statements such as could be adapted, could be connected -- this is Page 6 of the answer -- other obvious strictures could be used. That's not a standard for rejection. There's no factual basis there. Now, another problem here is that the level or ordinary skill in the web tensioning art has not been established. Now, we all recall that KSR teaches us -- reminds us that the level of ordinary skill in the pertinent art has to be ascertained. We have no evidence here as to what the level of ordinary skill in this art is or is supposed to be. This application was filed in 2003, so we do have a time frame on which to focus, but there's nothing in the record. I submit it's not possible to realistically evaluate based on the present record what would or would not have been obvious to one of ordinary skill in the art -- in the web tensioning art at the time this invention was made.

Now, the second obviousness rejection is directed to Claim 12. Now, Claim 12 calls for a incremental rotary optical encoder as the angular position sensor, a very specific art recognized device. To reject this claim the Examiner seeks to combine the teachings of Kowabata (phonetic sp.) with those of Cotay and Rajala that we have discussed just a moment ago.

First of all, the combination is not warranted. Now, the Examiner conceded that Cotay does not disclose an incremental rotary optical encoder. That concession is made in the Examiner's answer on Page 4, about two-thirds down the page. However, Kowabata does not show any kind of a encoded. Kowabata shows a distance sensor which may be a photo optical device. There is no similarity in function between those devices. There is also no place in Cotay or Rajala that the Examiner has identified where the Kowabata device, a distance sensor, ought to be placed.

JUDGE BAHR: But to be fair, that sensor in Kowabata isn't really a distance sensor, it's, it's using distance in order to determine angular position. Isn't that more accurate?

MR. CEPURITIS: No, in Kowabata, let us, let us look at Kowabata. Kowabata senses position of role, and the pertinent comment is on Column 4 of Kowabata, starting about Line 11, where it says that the distance between the distance sensor and center peripheral surface of an art member 51 does changes the angle of elevation, or the position of the arm can be detected according to the object of the distance sensor. That's -- in other words, it comes closer or further away, this is what the sensor will detect. This is not an acceleration sensor. This will not detect the acceleration even --

JUDGE BAHR: No, but I think you said it's not an angular position sensor. That, that's not exactly accurate, is it,?

MR. CEPURITIS: All right, I'll, I'll correct that, because it's not an angular position sensor for a dancer arm, but broadly speaking --

JUDGE BAHR: Arm 4 is not a dancer arm?

MR. CEPURITIS: No. I stand corrected. Four, four could be -- no, it cannot be a dancer arm because where's the dancer.

JUDGE BAHR: Three called the dancer roller.

MR. CEPURITIS: But 4 does not carry 3. It looks to me -- if you look at Figure 1, which is the larger figure, it can't possibly carry 3 because there's a web there. Okay? But, somehow the two interact because that, you can see in Figures 2 and 3. And, so that there is an angular chain, but that certainly would not be detecting the acceleration of the -- but yes, I will concede that that shows some kind of an angular change and arguably that would be detected by the distance sensor.

JUDGE BAHR: In Claim 3, Lines 28 -- 29 through 32 or so it says the dancer roller, 3, is axially attached to the fifth portion of the arm, 4, so as to be rotatable and its position would change as the arm, 4, pivots up and down by using the supporting end as a pivot, a supporting end.

MR. CEPURITIS: May I have the --

JUDGE BAHR: Column 3.

MR. CEPURITIS: Yes, Column 3, but which line?

JUDGE BAHR: Line 29 through 32 or so.

MR. CEPURITIS: Yes, so as to be rotatable.

JUDGE BAHR: As, as arm, 4, rotates dancer rollers, 3, will move up and down.

MR. CEPURITIS: Is that 4 pivots up and down, but are using the supporting end as a pivot. Now, which is the supporting end?

JUDGE BAHR: It's the end attached to the arc Number 51.

MR. CEPURITIS: I bet it must be that.

JUDGE BAHR: But in fact, actually, I, I think with regard to whether this is an angle detector, I think Item Number 5 is specifically identified by Kowabata as an arm angled detector. Someone would have to concede that there is an angular position sensor in Kowabata.

MR. CEPURITIS: All right, all right. I, I won't argue. You are correct. I stand corrected on that point. I, I was looking at the, the webs between 2 and 3, and there's no way that arm can be carrying that roller. It certainly doesn't show that, but the text says what it says. But at any rate, it still does not satisfy the requirements for a *prime facie* obviousness rejection. So even if we assume that Cotay, Rajala and Kowabata are combinable in some fashion not clear to me how, all of these devices disclose monitoring or teach monitoring of web tension, and all of these devices rely on a tension force determination for tension adjustment. The presently claimed invention, on the other hand, does not monitor web tension. Rather, a predetermined tension is maintained on the web by detecting and counteracting acceleration of the dancer arm. As during the processing the web tension changes, there will be a shift, and as soon as there's a shift in the dancer arm, in order to have that shift you have to have acceleration, that acceleration is detected and the torque of the servomotor immediately counteracts that.

Now, for the foregoing reasons that we've discussed, as well as those discussed in the Appellant's brief, a *prima facie* case of obviousness clearly

has not been out here. The cited references do not teach the claimed inventions. There is no fact-findings that could be made that would withstand the preponderance of evidence standard that we must satisfy. The Examiner's own unsupported statements clearly are not evidence, and do not provide the basis for findings of fact that could support the legal conclusion of obviousness.

I respectfully submit that the outstanding rejections are not sustainable and should be reversed. I'd be happy to answer any questions, additional questions that the Board may have.

JUDGE BAHR: I don't see in Claim 10 an express staff or, or structure for either measuring directly or calculating acceleration.

MR. CEPURITIS: In Claim 10, we have as the third element a dancer arm for engaging a web to be tensioned, having a free-end portion with a dancer rotatably mounted thereon, and a fixed-end portion pivotally mounted to the base so as to co-act with the angular position sensor and indicate relative angular displacement of the dancer arm as a web in contact with a dancer arm is maintained in tension.

And, then we have a controller for generating control output signal in response to acceleration of the dancer arm due to changes in web tension as detected by the angular position sensor. See, if we're doing the dancer arm and the controller together, I believe that the requirement is there.

JUDGE BAHR: Well, I, I see that you've got a controller that generates a signal in response to acceleration of the dancing arm, but that's not the same as either measuring or calculating acceleration. Everything has to accelerate, you know, coming from a --

MR. CEPURITIS: Agree. Well it doesn't have to be calculated as long as the controller -- I think calculation is implicit here because as long as the controller generates a control output signal is implicit in that statement that the output signal has to be related where and correspond to whatever was detected by angular position sensor so as to instruct the servomotor, okay, apply the torque please.

JUDGE BAHR: Okay, well what if, for example, we had a system where the angular position -- there was an angular positioning sensor, and upon sensing any movement, any change in angular position, we had a controller that generated a signal. And, the signal that was generated was a signal that would return the dancer arm to its neutral position. Would that meet this claim even if there was no calculation of acceleration?

MR. CEPURITIS: Well, it doesn't have to be. I would say yes because there does not have to be a specific determination of a value, which I understand your question to imply that there has to be a calculated value. As long as we get a signal, there's, there's an encoder on the shaft, okay, where the -- here's, here's the dancer arm, here's the roller, and there's a pivot here. There's an encoder on there. The angular position sensor detects a change here. Alerts, if you will -- if we humanize the element here, alerts the controller. There's a rapid change here. There's a signal corresponding to this rapid change. Now, the controller is calibrated to send out a signal to the servomotor, hey, immediately fix this change. That's what we have to do, keep, keep it here.

JUDGE BAHR: So, a system like Kowabata whose, whose objective is to detect a change and angle of that dancer arm and then return it to its neutral position would meet the claim?

MR. CEPURITIS: No, I don't believe so because how, how does Kowabata -- there's no teaching here how, how does Kowabata shift the position of those roles?

JUDGE BAHR: They -- as I understand it, they just flow two different ways to do that. One is to actually speed up the reel winder or unwind speed, and the other is to have some sort of a motor to wither axially or linearly or angularly move the dancer.

MR. CEPURITIS: Okay, but that still does not respond to acceleration --

JUDGE BAHR: Well, I thought you just told me --

MR. CEPURITIS: -- and it would be a much slower response.

JUDGE BAHR: It does respond to acceleration to the extent that when that, when that dancer arm moves it had to accelerate from a zero velocity up to some velocity to move, right?

MR. CEPURITIS: Well, right.

JUDGE BAHR: So, in that sense it was responsive to acceleration and velocity and, and change in angular position.

MR. CEPURITIS: Well, in response to, but it does not rely -- there's nothing here that says that you rely on the value of the acceleration --

JUDGE BAHR: Okay, okay that's a, that's a --

MR. CEPURITIS: -- now, you use the word --

JUDGE BAHR: -- different matter.

MR. CEPURITIS: -- calculation. Well, okay, our claim says alpha signal in response to acceleration due to changes in web tension, changes in web tension as detected by the angular position sensor.

JUDGE BAHR: Well, Kowabata just goes -- that's, that's why that dancer arm might move, because of a change in there. That's what it's trying to tell us.

MR. CEPURITIS: Well, I respectfully disagree with you, but if the Board would like to give me a new rejection on that point I'll certainly consider it.

JUDGE FISCHETTI: I have a quick question along the same lines with Rajala. The, the dancer arm, 24, are you saying that it's totally devoid of experiencing acceleration in its vertical movement?

MR. CEPURITIS: In the normal operating position it is my understanding that there would be no acceleration. It stands there steady for the established tension. Now, if there's a deviation from the established or the set point for the web tension, then there's going to be shifting one way or the other. And the objective of the servomotor and the controller and the detector system is to compensate for that as rapidly as possible. Also, in the specification, the applicants talk about zero mass, i.e., you don't have to account for the mass of the dancer arm assembly in this manner.

JUDGE FISCHETTI: But you need a calculation at that point, but the essence of what happens in, in the alley is you have a mass that is experiencing gravity one way or another.

MR. CEPURITIS: That's right, that's going to be force is equal to mass times acceleration. It has to be.

JUDGE FISCHETTI: Right. So in essence, to -- by the natural law of physics, that dancer bar has an experience of acceleration.

MR. CEPURITIS: Yes, it will experience acceleration, and this is what the servomotor is designed to counteract. And the angular, the angular

position sensor will be the measurer of how rapid is this change. And since, you know, it -- once you determine or once the controller is advised how rapid is that change, it will immediately send a signal to the servomotor, bring it back to where it was within the capabilities of the servomotor.

JUDGE BAHR: Are you, are you saying Appellant's will bring it back to where it was?

MR. CEPURITIS: The --

JUDGE BAHR: Or the prior art will bring it back, because what I'm confused about is if, if the -- as to whether Appellant's controller is actually compensating for the acceleration or it's actually returning it to its new position. Those are two different things, because if all you're doing is compensating for the acceleration you could still have some velocity and a change in velocity.

MR. CEPURITIS: The -- let me put it this way: As soon as the acceleration is detected, there's clearly a force, mass times acceleration. The controller instructs the servomotor apply a counter torque to the arm to negate this.

JUDGE BAHR: Not to move it back, but just to negate it so it doesn't --

MR. CEPURITIS: But to negate it, because it's instantaneous. So there's really not going to be much of a movement. As soon as this happens -- you know, I'm illustrating here by more of a movement then would actually happen because in the ideal situation this stays steady; that's the objective. But as soon as there's a force, the force is detected. The force is countered. I'm pushed this way; I'm pushing back. So, I can be pushing now I'm applying equal force with both arms so this thing stays here.

JUDGE BAHR: So, it seems the key to this claim probably is, is actually in the last paragraph; the applied compensating torque component being substantially the same as the force of the dancer arm acceleration.

MR. CEPURITIS: That's correct.

JUDGE BAHR: It's, it's only compensating for acceleration, not position change.

MR. CEPURITIS: Not position change, only compensation. You, you are correct, and I should have pointed that out. I stopped one subparagraph too soon when I read the claim.

JUDGE BAHR: Okay.

JUDGE CRAWFORD: Do you have anything else?

JUDGE BAHR: No.

JUDGE FISCHETTI: No, thank you.

JUDGE CRAWFORD: Thank you.

MR. CEPURITIS: Thank you, very much.

JUDGE CRAWFORD: Have a good day.

MR. CEPURITIS: Okay.

(Whereupon, the proceedings concluded.)